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U.S. Hydrographic Office.*

Commodore R.H. Wyman, U.S.N.

Hydrographer
to the Bureau of Navigation
Washington, D.C.

STEAM-LANES ACROSS THE ATLANTIC.

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UNITED STATES HYDROGRAPHIC OFFICE,
Washington, D. C., October 4, 1872.

It seems appropriate at the present time, when the ocean-steamers between the United States and Europe are so numerous and still on the increase, to republish a paper on the "Steam-Lanes across the Atlantic," written in 1855 by M. F. Maury, LL. D., &c., then a lieutenant in the United States Navy. The adoption of these or some similar prescribed routes for the passages to and from Europe would most assuredly give greater security to life and property and reduce the dangers of this navigation to those which may be encountered on less frequented routes.

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STEAM-LANES ACROSS THE ATLANTIC.

The disaster which befell the United States mail-steamer Arctic on her passage from Liverpool to New York, in the month of October, 1854, in consequence of her coming in collision with the French steamer Vesta, in a thick fog, forty or fifty miles to the eastward of Cape Race, first appalled the public mind with its enormity and then aroused it. Men inquired of each other if science or ingenuity could not devise means or invent plans for preventing the recurrence of similar accidents, or, in case of their recurrence, of providing against the terrible loss of life which attended the foundering of that noble ship. Of passengers and crew—men, women, and children—there perished, on that occasion, with her, to the number of about three hundred, owing, in a great measure, to improper management and to the dastardly conduct of a part of the officers and crew.

Among the many benevolent persons who favored the public with the results of their thoughts upon the subject, some suggested measures remedial and some preventive. Life-boats and life-preservers, water-tight compartments, station-bills for passengers and crew to "save ship" were among the remedial plans, and among those for prevention were fog-signals, true compasses, rate of sailing, lookout, and lanes, or a double track for the steamers crossing this part of the Atlantic, viz, a lane for them to go in and another for them to come in. All or any of these plans would, if adopted, tend more or less to diminish or mitigate the dangers of steam-navigation and the risk of life that passengers incur at sea; but those plans which tend to *prevent* accident, rather than those that look to affording relief after the occurrence of accident, seemed to come within the scope and objects of this work; and among these the lanes were most inviting. It will be found that, by establishing a lane or strip of ocean for the steamers to go in

and another for them to come in, the liability to danger from collision between steamer and steamer, as well as between steamers and sailing-vessels, will not only be lessened, but a new resource upon the high seas will, in many cases of wreck and disaster, be afforded to those in distress.

By examining Plate V carefully, any one may satisfy himself as to the extent to which the adoption of these lanes will lessen the liabilities, which are now very great, to collision in fog between steamers and sailers. The curves on that plate show that fogs and calms are, along these lanes at least, almost correlative terms; that is, they often occur together, and in proportion as they do occur together just in that proportion accidents from collision between *sailing-vessels* are lessened, for vessels moved by canvas cannot well run foul of each other in a calm, and in calms, with thick fogs, is precisely the time when such vessels are in the greatest danger of being run into by a steamer, for, being helpless then, they cannot get out of the way; consequently, if they will agree to avoid, as much as possible, the steam lanes as they are marked on the chart, by making it a rule never to attempt to beat along in them, but to cross them quickly, when they have to cross them, and to edge along out of them when, being in them, the wind changes and comes out fair—if those public-spirited ship-masters who are co-operating with me will, in this way, lend a hand, by giving the force of their example and precept, to dedicate to the use of the steam-navigation between Europe and America the very narrow slip of ocean included within these lanes, they will do much, in addition to what they have already done, toward improving navigation and lessening the dangers of the sea. On the other hand, the captain of every steamer should as scrupulously aim to keep within the lanes, and never to suffer his vessel to get out of them, except she be compelled to turn aside on account of ice or gales of wind, or unless she get out of them for want of observations after a succession of cloudy days.

I earnestly appeal to the fleets of observers, to whom I owe so much, and to whose enlightened zeal and generous labors for the advancement of science and the improvement of navigation this work bears witness, to second this recommendation and make it a rule to observe the lanes. This appeal is made especially to those who are in the European

trade. They will render a service to be most gratefully acknowledged if they will always, whenever they enter the lanes, either make haste across them or run obliquely out of them, according as their course may lie or as the winds may allow; and, when they do find it necessary to enter one of these lanes, they will please note the fact in their abstract-log kept for this office, and state also the time and distance sailed in each lane, with such remarks as circumstances may suggest.

The more sailing-vessels will agree to keep out of the lanes the more will it concern the steamers to keep in them, and the greater becomes the danger at night, or in a fog, to the hapless sailing-vessel that shall needlessly thrust herself into one of them. Practically, their adoption will be attended on one hand with so little inconvenience or loss of time either to sailers or steamers, while, on the other, it will be attended with so many advantages and so much less risk to vessels, crews, and passengers, that I do not think it necessary to add another word to induce all, I hope, who follow the sea, but *certainly*, and *at least*, those who are co-operating with me, to favor the lanes and do all that is proper to establish them.

I therefore content myself with laying before them, for their information, the following correspondence, and to say that the recommendation therein contained has met with favor from the right quarter, both in Boston and New York, and with every sea-captain with whom I have had an opportunity of consulting.

From Messrs. John S. Sleeper, C. W. Cartwright, J. Ingersoll Bowditch, R. B. Forbes, and others, underwriters, ship-owners, and merchants of Boston.

JANUARY 8, 1855.

SIR: In connection with the discussion respecting the dangers of crossing the Atlantic and the modes of diminishing them, we have observed a suggestion contained in your letter to Walter R. Jones, esq., of New York, proposing one route for steamers to go and another for them to come, of which idea you cite our fellow-citizen R. B. Forbes, esq., as the original author.

Permit us to hope that this project may receive your further attention, and that you will prepare a chart, exhibiting the routes suggested, so laid off as may, in your judgment, best answer the purpose in view, of lessening the liability of collision without materially lengthening the passage.

By thus carrying out a proposition which strongly recommends itself to many, you will add another important service to the many for which we would express our thanks.

Lieut. M. F. MAURY,

National Observatory, Washington.

Reply to above, dated February 15, 1855.

GENTLEMEN: I duly received your communication of the 8th ultimo, requesting me to carry out the proposition contained in my letter of the 8th of November last, to Walter R. Jones, esq., of New York, by projecting the two steam-lanes across the Atlantic, viz, one for the steamers to go in and the other for them to come in.

I at once addressed myself to the task, and after a careful examination of the somewhat ample materials afforded by this office, I have at length the pleasure to submit charts with the lanes projected on them, together with other matter bearing upon the subject.

I have examined a number of the logs both of the Collins and the Cunard lines. The part of the ocean used by them in their voyage to and fro, between the meridians of 15° and 65° west, is, for the American, 300 miles broad, and for the English, 150 miles broad. The American roadway overlaps and includes the English; consequently there is a breadth of ocean 300 miles wide, in any part of which a sailing-vessel, by night or in the fog, is now liable to be brought into collision with the steamers.

Now, suppose we take this same breadth of ocean and lay off a lane, twenty or twenty-five miles broad, near its northern border, and another, fifteen or twenty miles broad, near its southern border, and recommend the steamers, when coming westwardly, to use the former, and, when going eastwardly, to take the latter; would not the adoption of the recommendation contribute to the safety both of steam and sailing vessels, of passengers and crews? I think so.

I do not mean to create the impression by anything I

say or do, that the adoption of these lanes would *do away* with collisions, or call for less vigilance, or relieve in any manner the shipmaster from his obligations to look closely to the navigation of his vessel, to be watchful, prudent, cautious, and careful. On the contrary, he must never relax his attention to the seaman's three I's nor slight his water-thermometer. The adoption of the lanes will simply lessen the *liabilities*, by diminishing the *chances* of collision, and to that extent make the navigation of the Atlantic *less* dangerous. So far from relaxing attention to the log, lead, and look-out, these lanes call for increased diligence on the part of the master, for that breadth only is given to them which will just make them broad enough to cover the probable errors in latitude of a good, careful navigator, after he has been two or three days without an observation. A narrower lane would be forbidding, from the difficulties of keeping in it; a broader lane would be mischievous by relaxing its calls upon the attention of the master to keep his steamer in it, and by occupying so much of the ocean that sailing-vessels would not so willingly, because they could not so conveniently, give it up to the steamers.

If these lanes be adopted by the steamship companies, and engraved on the general charts of the Atlantic that are used by the vessels of the different nations, and marked as they are on the Track Charts, series A, of the North Atlantic, and as they are on Plates II and III, I have very little doubt that sailing-vessels would, in the process of time, make it a rule to edge off from the lanes, especially at night and in thick weather. In the first place, the lanes are so narrow that if the sailing-vessel has to cross them, as, in head-winds and in the progress of her voyage, she not unfrequently will, she will be but a little while in them, and her master will then know on which side to watch for the danger. In the next place, if his course lie along the lane and the winds be fair, he will, as night comes on or as the weather grows thick, begin to think of the steamers and collision and his own responsibilities, and then feel much more comfortable by edging off to one side and leaving the steam-track clear.

The average route of the steamers coming, as determined by the abstract logs on file here, crosses the meridians of 40° , 45° , and 50° , from forty-five to sixty miles

north of the lane to America, and joins it on the meridian of 55° , and then runs nearly along with it to Sandy Hook.

The lane coming is, therefore, a better road than the average route at present used, and for these reasons, viz: It is thirty miles shorter; it runs so far south of Cape Race and the Virgin Rocks that no time need ever be lost in turning aside, when fogs prevail, to avoid these dangers, for it passes one hundred miles south of Cape Race.

This statement, without any explanation, might appear paradoxical, for the nearer to Cape Race the shorter the distance; yet, practically, it has not proved so, because vessels, especially in a fog, as they near this cape have frequently to run one, two, three, or more hours to the southward to be sure of clearing it. When they are so running they are not making much headway toward their port. So, on the long run, the attempt to shave Cape Race makes the average distance practically greater than it is by the lane. Indeed it is greater than the statement above implies, for the distance which I have taken as the average by present routes is measured by straight lines from position to position, at noon.

Congress has given the Secretary of the Navy authority to employ three vessels in assisting me in my researches, by testing new routes and perfecting discoveries. They can be very usefully employed just at this time. Perhaps he may find it convenient in the spring to detail one or two of them for this service. If so, I shall urge upon his attention the importance of completing the deep-sea soundings across this part of the Atlantic, and also ask for an examination of the Virgin Rocks, with the view of planting on them, or just under their lee, a bell-buoy. In that case, this lane might be lifted up so as to shorten the distance and save time by bringing this buoy on the edge of it, and thus provide a landmark that would be very useful in all weather and to all classes of vessels.

The shortest distance possible for a steamer between Liverpool and Sandy Hook is 3,009 miles; the average distance actually accomplished is 3,069 miles, and the distance by the middle of the lane coming is 3,038. There is also another recommendation in favor of this lane to the west, which is this: It lies along the northern edge of the Gulf Stream, where there is an eddy setting westward often at

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the rate of a knot an hour. On the average, I assume that the set of this eddy will amount to twelve miles a day for three days and a half, or, say, forty miles. This makes the distance by the lane coming practically about 2,998 miles; or, allowing twenty miles for *détour*, we shall have 3,018 miles, which will shorten the average time of the passage this way three or four hours, with less risk of collision and less danger from Cape Race by the way.

It may be urged against this lane that it cannot always be followed on account of the ice, and that, inasmuch as it crosses the Grand Banks, the steamers that ply in it may now and then run down a fishing-vessel. The reply is that, as far as the fishermen are concerned, they are now liable to be run down by the steamers both going and coming, whereas, with the lane, that liability is incident to the steamers alone that are westwardly bound, and the fishermen will have the advantage of knowing pretty nearly where the steamer will pass and which way she will be coming. And as for its being obstructed by ice, so as to compel the steamers, as it occasionally will, especially in May or June, to turn out of it now and then, the Erie Canal, of New York, is obstructed by ice the whole of every winter, but that does not prove it to be of no value; it only shows that it, like this lane, would be of more value to commerce if it were never obstructed by ice or anything at all.

You will observe, by looking at this lane upon Plates II and III, that the Grand Banks afford a pretty good landmark, which can be used in the thickest weather. Generally, the water-thermometer is found to fall as soon as you near these Banks; it is generally a good landmark for them. The eastern edge runs north and south, and, therefore, affords an excellent correction for longitude. Having ascertained, by the lead, when the vessel first strikes this edge, then noting the soundings and the distance run before clearing the Grand Banks, the latitude will also be known with accuracy sufficient to enable the navigator to decide whether he be in or out of the lane, and, if out, on which side. The lane crosses the Banks near their greatest width, 275 miles. If a steamer be crossing there in a fog, and in doubt as to her position, she can judge, by their breadth and the soundings, pretty nearly as to latitude. For instance, if the breadth of the Banks, when crossed, be less than 275 miles,

but the soundings not less than forty fathoms, the vessel has crossed the Bank to the north of the lane; but if she find herself in less than thirty fathoms, then she has crossed to the south of it. Should she, however, find herself in water that suddenly shoals to less than twenty fathoms and as suddenly deepens again, then she is near the Virgin Rocks, or the rock and Nine-fathom Bank to the east of them, and her position is immediately known.

It should be recollected, however, that these lanes are not channel-ways in which steamers must keep or be lost. Gales of wind, ice, and other things will now and then force a steamer out of them, and in such cases she will actually be where she is now, for she will then be in no more danger than she is now; only when she gets back into the lane she will be in less.

You will doubtless observe the advantageous position of the fork to Halifax in the lane from Europe. As this lane approaches Newfoundland, it edges off to the south, in such a manner as to render it impossible for a vessel so to miss her way as to get ashore. Suppose a steamer attempting this lane to be, when she nears the Grand Banks, 100 miles out in position, (a most extravagant case,) and that she be out on the Newfoundland side, she would, if behaving properly, be steering parallel with the lane, and if bound to New York she would go clear of Cape Race. But she might be bound for Halifax, and by steering west too soon might run upon the land; but recollect that the land to Halifax turns off *on soundings*, and a west course from where the lane from England strikes soundings on the Grand Banks will take you clear of everything. So, without the most gross neglect of the lead and all the proper precautions, which it is the duty of the shipmaster to take, it would seem impossible for him to run his steamer into danger here.

In the longitude of the Grand Banks, the lane to Europe is 200 miles south of the lane to America. As a rule, this lane for the eastern-bound steamers can be followed always, admitting that an exception now and then in practice will make the rule general. It will be observed that this lane runs E. 15° S. from Sandy Hook to the meridian of 70°, where it takes a course E. 12° N., toward its junction with the arc of a great circle, south of the Grand Banks. Though

the distance by this lane from Sandy Hook to this junction is a few miles longer than the direct line, yet on account of the Gulf Stream, it is *in time* the shortest distance that a steamer can take. From the Capes of Delaware it is obviously the shortest.

The distance from Sandy Hook to Liverpool by this lane is 106 miles greater than it is by the lane coming. But the lane going is in the Gulf Stream, which of itself will nearly, if not quite, make up for this difference. The San Francisco steamer was wrecked in the Gulf Stream, and from the time she was disabled till she was abandoned she drifted at the rate of two knots an hour. When the Great Western steamship first came over she stemmed the Gulf Stream, and was set back in it 175 miles during the voyage. Now, from the Grand Banks west, the track of the Great Western was not as much in the strength of the stream as this lane is, for she passed to the north of it. This trip, too, was in April, when the middle of the stream is well south.*

I may be excused for mentioning, in this connection, an incident relating to the early history of ocean steam-navigation. After this passage of the Great Western, I wrote a paper on the achievements of the New York packet-ships, and pointed out on a chart the great-circle route from New York to England, and commended it to the attention of those concerned in this new navigation. The paper, with the chart, was published in the Southern Literary Messenger (Richmond, Virginia) for January, 1839. The editor sent a copy to Captain Hoskins, and he ever afterwards went by the route recommended on that chart. His competitors stuck to the old rhumb-line route, and from that time Hoskins generally beat them, this way, about a day; and here is the explanation: They were sent back in the Gulf Stream 150 or more miles; he was sent forward 40 or more by the eddy, and gained some 50 or 60 additional by the great circle, which made altogether about one good day's sail in his favor. The great circle, or Cape Race route, was not generally adopted, however, even when he left the line;

* The thread or axis of the Gulf Stream moves up and down in declination as the sun does, being farthest north in September, farthest south in March. Its limits are not accurately described on any general chart that I have seen.

and it has been mischievous by tempting navigators to shave the cape too closely.

The current of the Gulf Stream is not only in favor of the lane going, but the gales are more favorable and the fogs less frequent than they would be by a more northerly route.

In order to enable you to judge knowingly as to the relative merits of these two lanes in this respect, I have, with the help of the most willing, zealous, and able corps of assistants that one ever had, and such as can be formed only of Navy officers, examined and discussed abstract logs containing observations for no less than 46,000 days, on the winds, weather, the sea, and the currents in the parts of the ocean through which these lanes pass. The result of that discussion I submit herewith for information, on a chart of engraved squares, (Plate V.) The horizontal lines are there marked as per cents., each being counted as one and every fifth one being a little more heavily ruled than the rest. The vertical lines, marked 70° , 65° , 60° , &c., are meridians of longitude between which the lanes pass. Between each two of these meridians are twelve columns for the twelve months, beginning always with December, the first winter month. Thus, the navigator wishes to see what is the most foggy month in the lane to America between the meridians of 70° and 75° . He finds on the plate the fog-curve for that lane, and his eye is immediately attracted to the remarkable peak formed by this curve, in the July column between these meridians, the meaning of which is that, according to the averages derived from these 46,000 days, the probabilities are that, if he were to pass along this part of that lane one hundred times in the month of July, but in different years, he would find it foggy twenty-eight times, or, in other words, twenty-eight per cent. of the days in July are foggy along that part of the lane. Casting his eye farther along, he will see that fogs, at certain seasons of the year, are astonishingly prevalent from longitude 55° to longitude 45° , (on the Grand Banks,) and when he comes to count the columns he will find that June is the foggiest of months. But the relief and consolation is that that is precisely at the season of the year when daylight is the longest, so that even here there is compensation.

Now he looks at the fogs for the lane going, and he is

struck with the more modest flexures of the curve, and particularly with the fact that both the fog-curves almost invariably come down to the zero (0) line near the meridians; in other words, that the fogs are less prevalent in both lanes during the autumn and winter, when there is least daylight.

In like manner, he wishes to know as to his chances for meeting with a gale of wind as he passes along in the lane to Europe, and whether these gales will be adverse or fair; in other words, whether they will have easting or westing in them. Now, he sees, under the head of "Lane to Europe," (Plate V,) by the curve marked "fair gales," that the most stormy part along this line is between the meridians of 35° and 40° ; that here, in January, it is blowing a gale of wind half the time, (fifty-two per cent.,) while at certain other seasons of the year gales seldom or never occur. But these gales all have westing in them, and are therefore fair. The preponderance of fair gales along the lane to Europe, viz, all gales having westing in them, is very striking. The vessel will be running with these gales, and therefore diminish their strength. In like manner the gentle flexures in the curve marked "head-gales" denote how much less frequently gales with easting in them are to be met with in the regions through which this lane passes. Now he will be struck with another remarkable physical fact which experience has proved and these statistics have developed: that fogs and gales, in certain parts of the lanes, seldom come together; for instance, as the fog-curves run up, the gale-curves, both for coming and going, come down, and *vice versa*. This feature is very striking all the way from the meridian of 25° to that of 55° . These curves are both suggestive and instructive. Others have been added to show, also, the per cent. of calms, rains, and thunder and lightning by each lane.

That you may judge also as to the relative frequency with which the parts of the ocean in which these two lanes are traversed by sailing-vessels, I have projected them also on series A of the Wind and Current Charts.

You will observe, by referring to this series, that the part in which the lane going lies is very much frequented, but it is frequented mostly by vessels going. (See also Plates II and III.) Those that are coming this way—that is, to the west—seek, for the most part, to avoid the Gulf

Stream, either by going to the north or by taking what is called the southern route, which is very common, especially in winter; so that steamers, when in the lane going to Europe, will find the vessels generally all bound the same way, and likewise in the lane coming to America, the vessels seen, though not so many, will for the most part be steering to the westward. And when all are bound the same way collisions are rare.

According to the tables given,* the best routes for sailing-vessels to Europe, as there determined, run along, for the most part, south of the line going until you reach the meridian of 45° , between which and 40° they cross this lane and run along between it and the other. These are the tracks that are projected on Plates II and III.

I will close this report with a recapitulation as to distances and courses by each lane between New York, Halifax, and Philadelphia, on one side, and Cape Clear and Scilly Isles, on the other, first begging leave to say that, according to my computation, founded on such statistics as I have touching the velocity of the Gulf Stream, if two steamers bound for Cape Clear, and of exactly equal speed, were to start from Halifax to see which should first get into the great circle part of the lane to Europe from New York, and if one were to go straight for it by steering east and the other were to follow the European lane from Halifax as projected on the chart, this one would reach the point of destination quite as soon as the other, the drift of the Gulf Stream compensating for the greater distance.

DISTANCES TO AMERICA.

	By Lane.	By Great Circle.
From Scilly Isles to Halifax	2,351	2,305
From Scilly Isles to Capes of Delaware	2,948	2,909
From Scilly Isles to Sandy Hook	2,882	2,840
From Cape Clear to Halifax	2,192	2,170
From Cape Clear to Capes of Delaware	2,789	2,765
From Cape Clear to Sandy Hook	2,723	2,695
From Cape Clear to Sandy Hook by actual average		2,754

This statement shows that by the lane to America the distance is actually shorter, both to Sandy Hook and, we may infer also, to the Delaware, than the average distance by present route, for the route actually pursued by the steamers now, both to Sandy Hook and the Delaware, may be considered the same from Cape Clear or the Scilly Isles as far west as longitude 70° .

* Maury's Sailing Directions, 8th ed., vol. 2, pp. 26 to 35, inclusive.

DISTANCES BY LANE TO EUROPE.

	To Scilly Isles.	To Cape Clear.
From Halifax	2,436	2,285
From Capes of Delaware	3,024	2,873
From Sandy Hook	2,980	2,829

"Besides the *détour* from the great circle which a vessel from New York, Halifax, Boston, or Philadelphia would necessarily make by following the European lane to Cape Clear, it would require an *additional détour* of only 15 miles for vessels bound into the English Channel to use it also as far as Cape Clear. This lane, therefore, will, in consequence of the favorable currents of the Gulf Stream, put a vessel into Southampton quite as soon as she could reach that port from New York or Philadelphia by the great circle route. Vessels from Halifax will have to make the greatest *détour* of any by adopting the lane to Europe; but for them it is less than 100 miles out of their way as they now go, and it will prolong their average passage eastward perhaps two or three hours. I say *perhaps*, because I am not sure but that the steamers from Halifax and New England are set back by the cold current 20 or 30 miles on the route now used for the eastern passage. The Gulf Stream, even from where they will join it by this lane, will set them forward, on an average, 40 or 50 miles at the least. It seems, therefore, that the attractions of this lane as it regards safety should more than outweigh the *probable* loss of an hour or two during the passage. When I speak of distances by the lanes, it should be recollected that the *middle* of the lane is meant, as per following table of courses and distances:

LANE TO AMERICA.*

	Course.				Distance.
	W. 33° 7' N.				159 miles.
From Scilly Isles to Cape Clear,					
Cape Clear to lat. 51° 23', long. 15° 0'	1 55				187
lat. 51° 23', long. 15° 0' to lat. 51° 16', long. 20° 0'	2 17 S.				187
51 16 20 0 50 56 25 0	6 5				189
50 56 25 0 50 23 30 0	9 50				193
50 23 30 0 49 36 35 0	13 41				199
49 36 35 0 48 33 40 0	17 45				207
48 33 40 0 47 15 45 0	21 8				216
47 15 45 0 45 38 50 0	25 10				228
45 38 50 0 45 0 51 45	27 13				83
(a) 45 00 51 45 44 10 55 0	19 45				148
44 10 55 0 42 40 60 0	22 27				236
42 40 60 0 41 42 65 0	14 34				231
41 42 65 0 40 30 70 0	17 45				236
40 30 70 0 to Sandy Hook,	0 43				183
40 30 70 0 to Capes of Delaware,	22 8				249
(a) 45 0 51 45 to Halifax,	3 53				503

* The courses and distances are for the middle of the lane.

LANE TO EUROPE.*

				Course,	Distance,
				°	miles.
From Capes of Delaware to lat. 39° 40', long. 70° 0'				E. 10 46 N.	236
Sandy Hook to lat. 39 40, long. 70 0				14 29 S.	192
lat. 39 40,	long. 70 0	to lat. 40 31,	long. 65 0	12 24 N.	237
40 41	65 0	41 9	60 0	9 39	227
41 09	60 0	41 33	55 0	6 5	225
41 33	55 0	41 53	50 0	4 57	232
(b) 41 53	50 0	43 55	45 0	29 6	251
43 55	45 0	45 46	40 0	27 28	241
45 46	40 0	47 18	35 0	24 4	226
47 18	35 0	48 32	30 0	20 18	212
48 32	30 0	49 30	25 0	16 21	206
49 30	25 0	50 14	20 0	12 46	199
50 14	20 0	50 45	15 0	9 17	192
50 45	15 0	to Cape Clear,		4 34	189
Cape Clear to Scilly Isles,				27 39 S.	151
(b) Halifax to lat. 43° 30', long. 69° 0'				20 7	163
lat. 43° 30', long. 60° 0' to lat. 42° 30', long. 55° 0'				15 17	181
lat. 42° 30', long. 55° 0' to lat. 41° 53', long. 50° 0'				9 28	225

Thus it appears that one lane will practically shorten the distance from Cape Clear to Sandy Hook and the Delaware by 30 miles, while the other prolongs the distance going to Europe 75 miles, which prolonged distance, when measured not by safety, but *in time* alone, the Gulf Stream, better weather, and diminished frequency of fogs will more than compensate for. In my judgment, these lanes, if properly followed, will make the average length of passage, as determined by the mean of all for the year, probably less each way, certainly not more than an hour or two longer than it now is. Individual passages coming will, perhaps, not be made so quickly as they have been, but, on the average, trips will be shortened.

For a better understanding of the whole subject, I beg to refer to Plates II, III, and V.

The increasing number of steamers tends still further to prove the importance of these lanes upon the commercial interests of the world. The merchant-steamers plying between Europe and the United States during the year 1857 made no less than 374 passages. This is exclusive of man-of-war steamers. There was, therefore, on an average, no less than 14 steamers in transit on the high seas during the whole year, which would give 7 for each lane all the time. These steamers transported, besides their own crews, 54,700 persons as passengers, which is more, by 24,500, than were

* The courses and distances are for the *middle* of the lane.

transported by steam during the year 1856. One of these steamers, (screw,) the *Tempest*, sailed from New York for Glasgow in February, 1857, and was never heard of. Now, if these lanes had been used by all of them, she could not—whatever it was that caused her loss—have survived her injury more than 48 hours without being passed by some other steamer.

Screw-steamers are rapidly on the increase. They do not make as much noise with the propellers as the side-wheel steamers do with their paddles; consequently, in thick weather, they do not give as much warning of their approach as the others with their paddles. In this circumstance I find another plea in favor of the lanes.

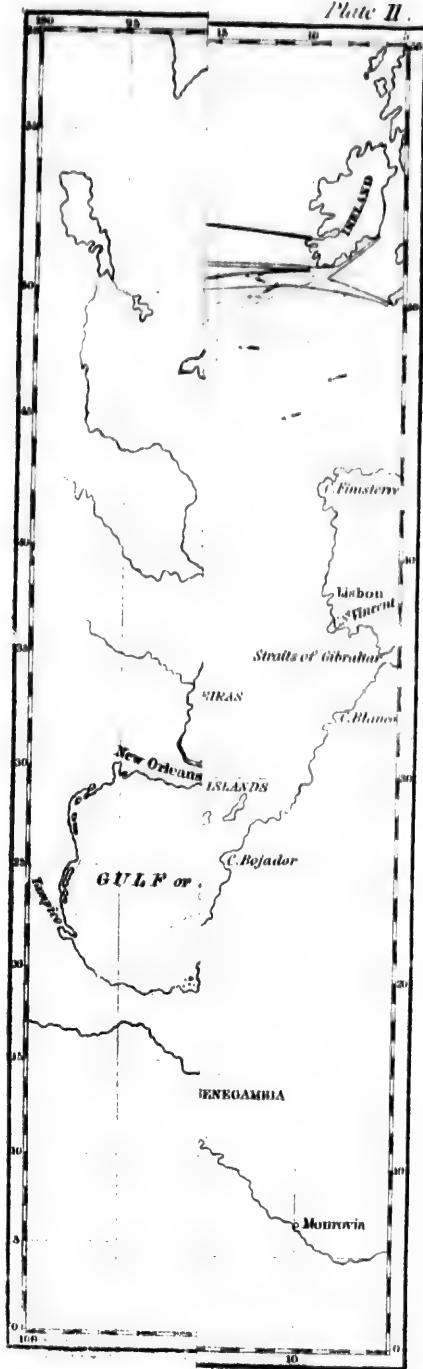
Three years have now (1858) passed since these lanes were projected. The shadows cast by the lights of experience from them are before us. Wrecks and collisions at sea have greatly increased, especially about the British Islands. The crowded state of the sea renders the recognition and use of these lanes a matter of more and more importance every year.

The following summary of wrecks and collisions ought to plead, trumpet-tongued, in favor of our lanes. It is derived from the public statements made by a humane society in England, and is copied from the wreck-register of the Life-boat.

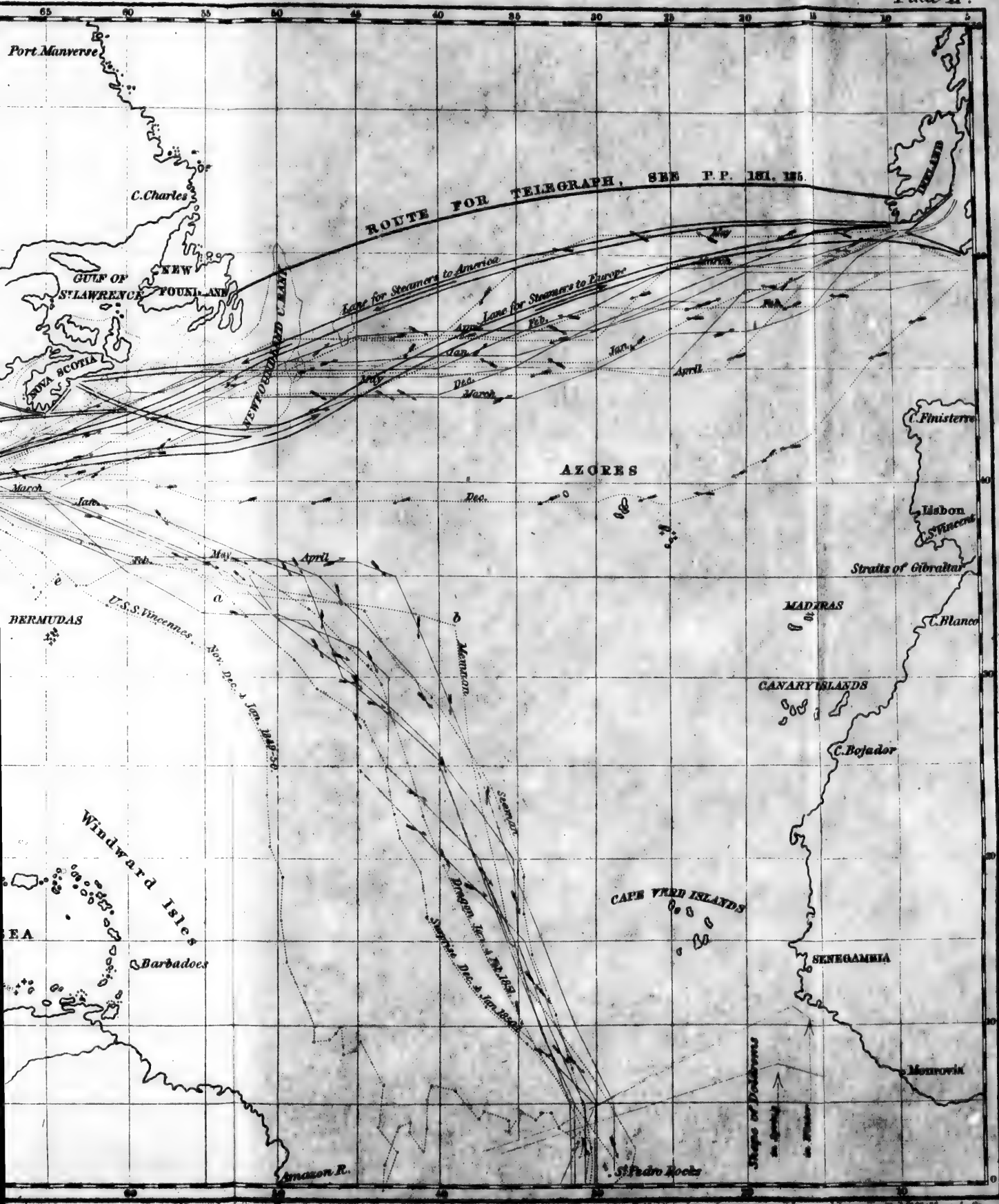
Year.	Wrecks.	Collisions.	Total.	Total lives lost.
1852	958	57	1,015	829
1853	759	73	832	989
1854	893	94	987	1,549
1855	894	247	1,141	469
1856	837	316	1,153	521
Total	4,341	787	5,128	4,348

Thus we find that no less than 220 ships were totally lost or stranded in 1856 from errors, unseamanship, or drunkenness, or other preventable causes, in addition to those from stress of weather.

Note II.







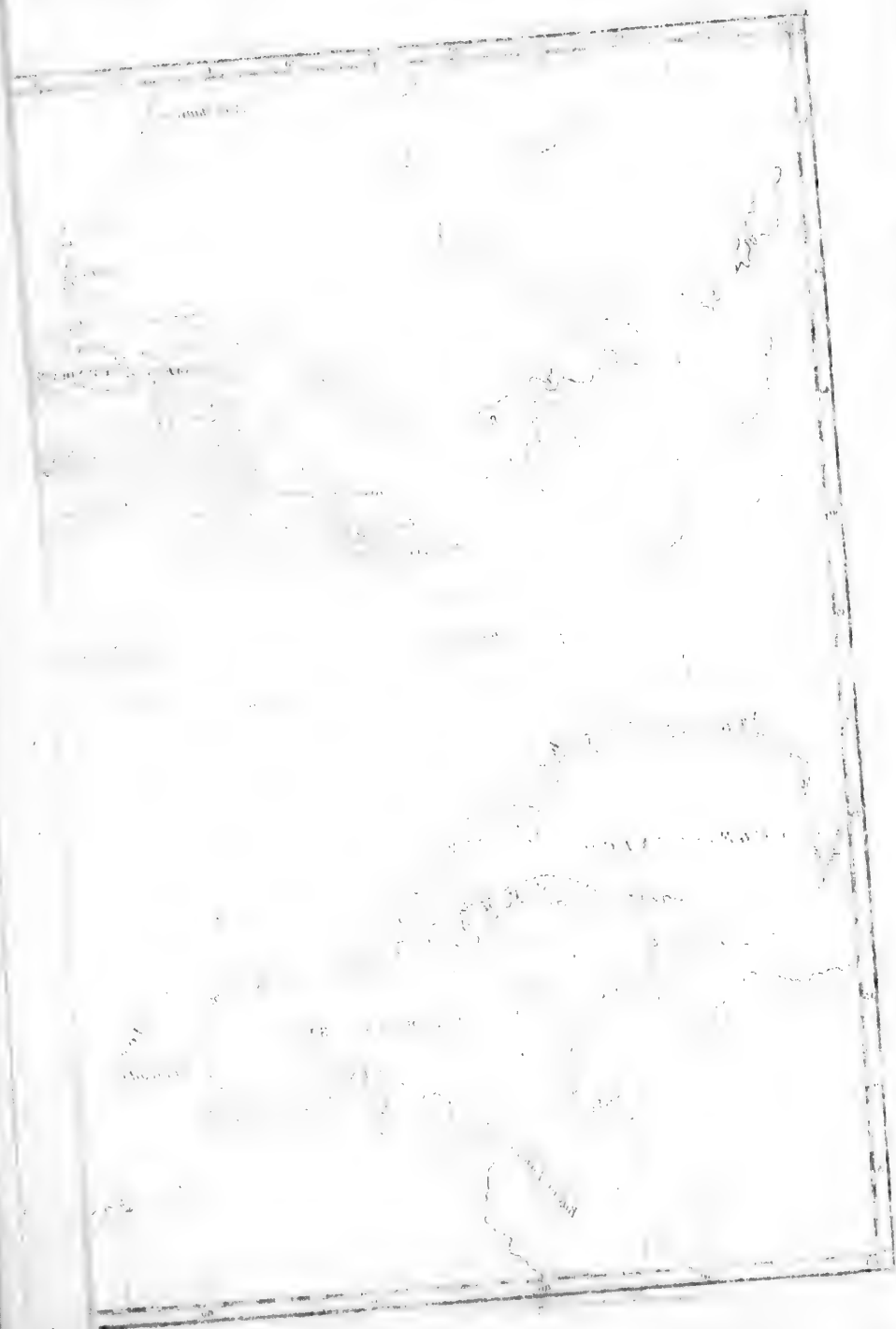
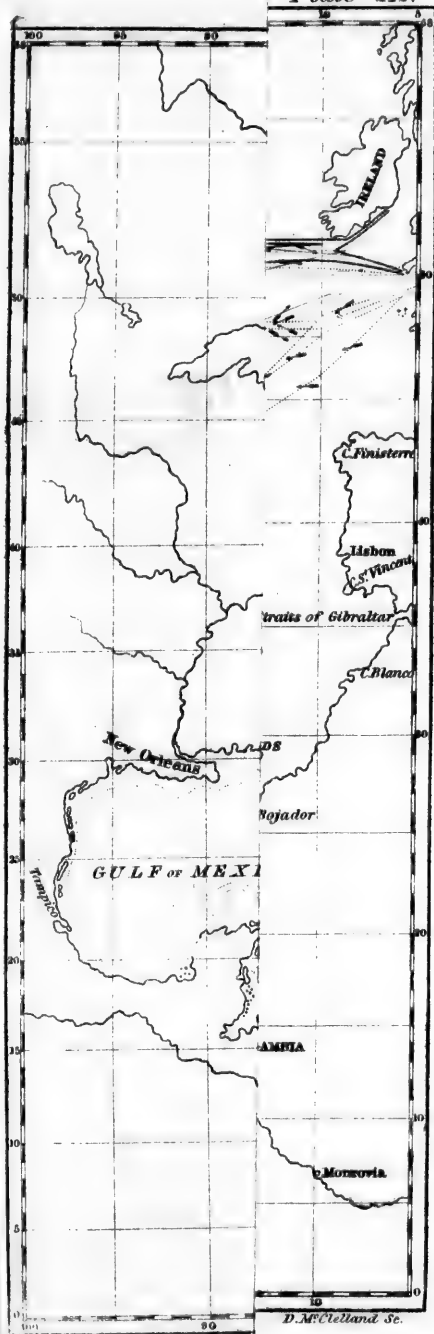
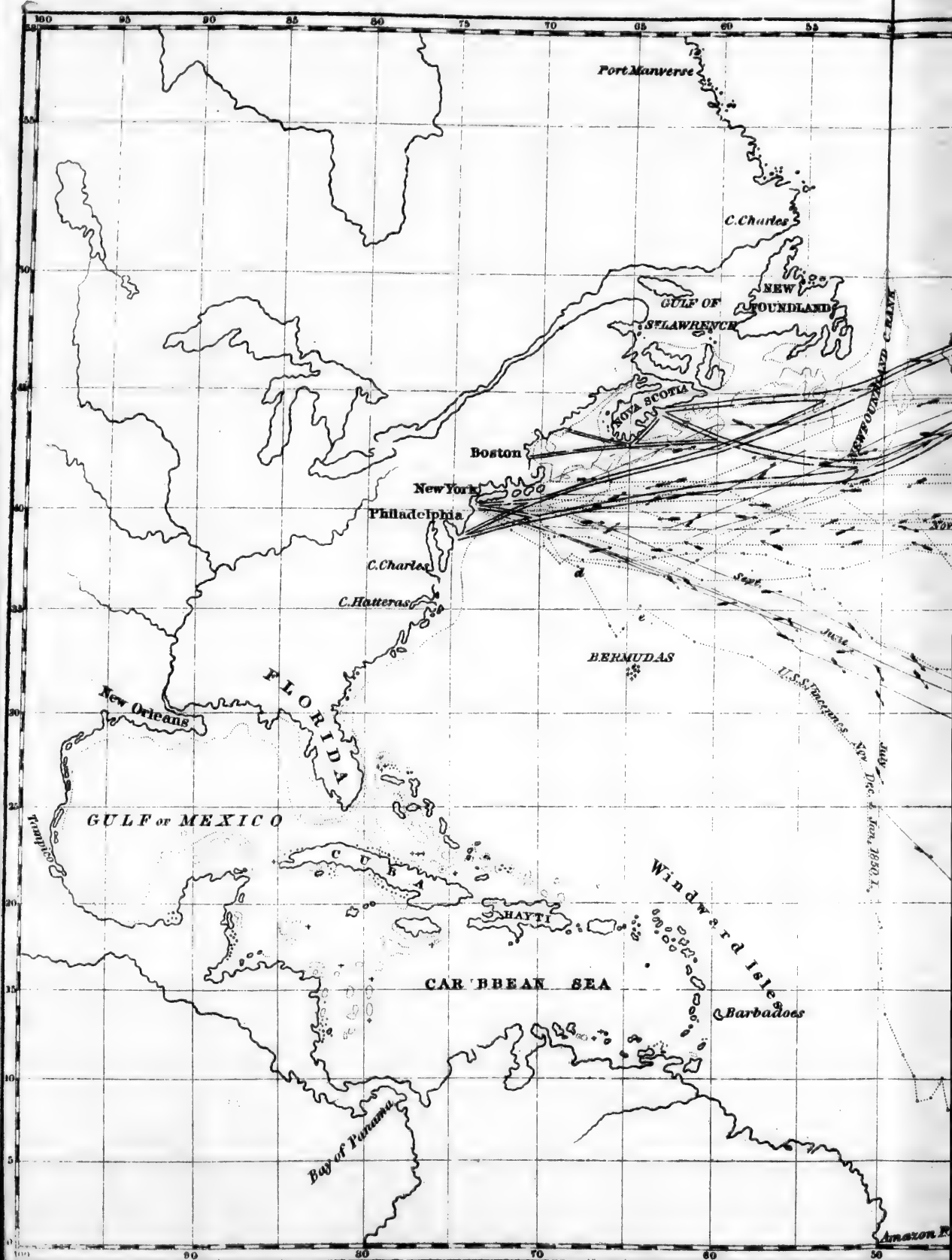
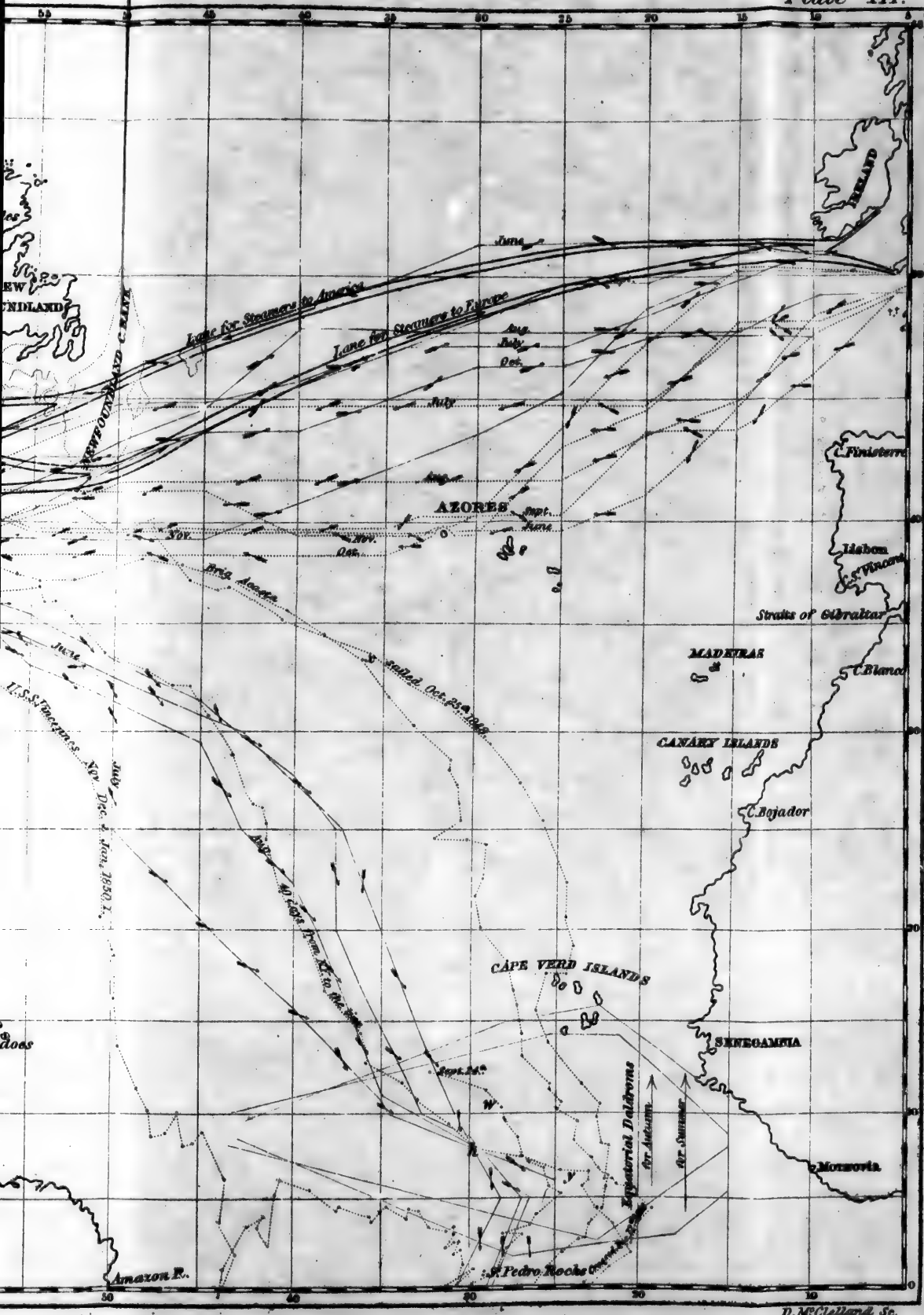


Plate III.









Total

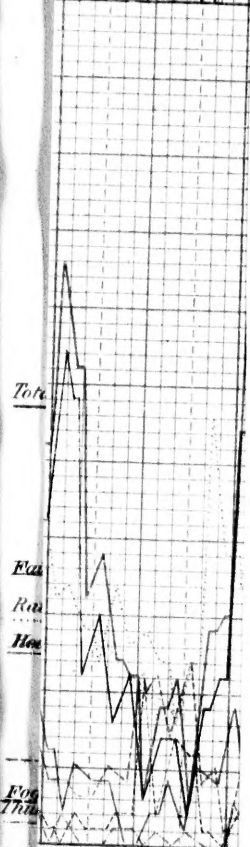
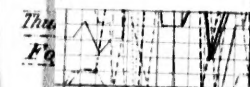
Rain

Humidity

Wind

Temperature

Fog



LANE
TO
AMERICA

Total Gales

Rains

Head Gales

Fair Gales

Calms

Thunder & Lightning

Fogs

LANE
TO
EUROPE

Total Gales

Fair Gales

Rains

Head Gales

Calms

Fogs
Thunder & Lightning

